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July-August 1991

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COVER: Residents of Sandwip Island, Bangladesh, carry a sack of rice dropped for them by a U.S. helicopter. Following a devastating cyclone that may have killed over 125,000 people, the United States diverted some of its forces from the Persian Gulf to help in relief efforts. Story on page 9. Photo by Bullit Marquez, AP/Wide World Photos.

To Be the Best

On 28 June 1991, I had the honor of taking the helm of the nation's finest health care organization—the Navy Medical Department—from one of its greatest leaders. VADM James A. Zimble had a herculean task before him when he became Surgeon General in 1987. He likened Navy medicine to a patient and diagnosed that patient as critical. In the years to come, he marshaled the tremendous human resources of the Navy Medical Department and enlisted Navy and Marine Corps leadership onto the trauma team that brought us back to health.

I was privileged to be part of that team, as indeed every one of us were. Admiral Zimble encouraged and solicited comments from the field on how best to treat the patient. Under his leadership, Navy medicine steadily gained strength and, as so magnificently demonstrated in our recent support of Operation Desert Storm, achieved not only its health but was fully fit and ready for action.

The initiatives, innovations, and advancements that brought us where we are today must be nurtured and built upon. Over the past 4 years, Navy medicine's leadership worked closely with Admiral Zimble in formulating the Navy Medical Department's Guiding Principles and Mission and Vision statements—our focus for the future. I expect to rely on our flag officers and other leaders as much, if not more, as we continue the course laid in by Admiral Zimble.

One of the key elements in Navy medicine's recovery has been Total Quality Leadership (TQL). We are leading most of the Navy in engendering TQL culture throughout our system, partly because our scientific training is complementary to the TQL statistical methodology. We all have a common vision of the future, a common sense of values. We're all in the same business—health care. It's a TQL-based business. We just need to round out our knowledge. We need the statistical process control techniques, more education, and the tools to do the job.

Yet while we go about changing our culture, we still have business to do. When the Navy and Marine Corps fighting forces needed us, we were there for them. And we were also at home, ensuring their families were not lacking for care. We have a moral obligation to maintain our capability to meet the needs of our fighting forces while continuing to care for their families. We can do that.

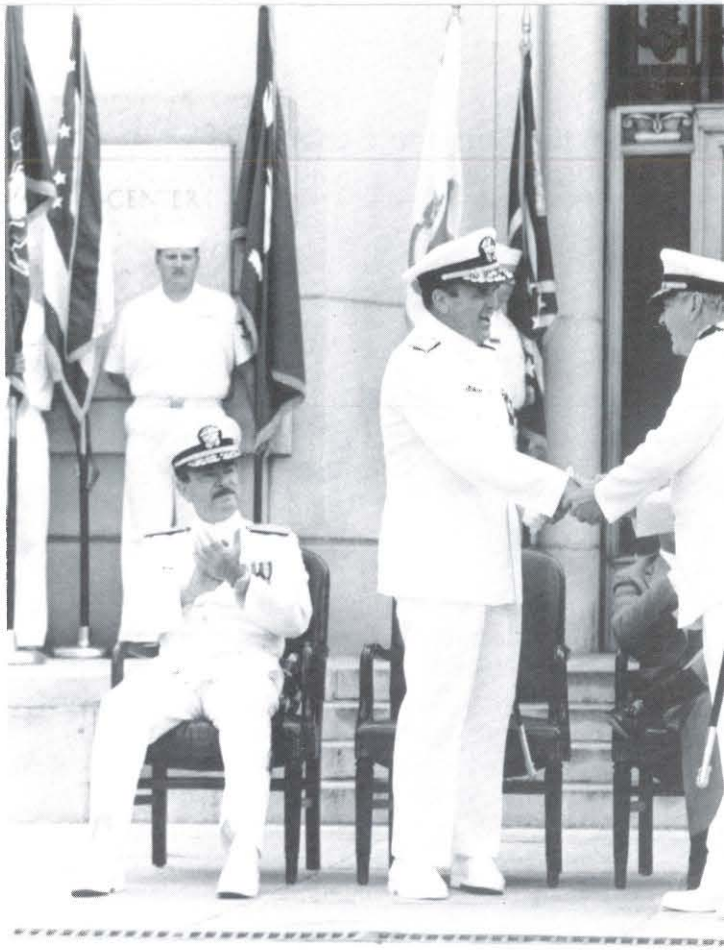
If we look at where we were, where we are, and where we need to be, it is amazing how close to optimum we are. Sometimes all it takes to solve a problem, for instance, increase access to a particular department and free the in-house staff to tackle more challenging cases, is to arrange for a civilian provider to come in once a week on a partnership arrangement. I urge all of you to look realistically at what you need to do your job better, and then look for innovative ways to meet that need. This is TQL at its best. And for TQL to work, you cannot micromanage, nor can you be micromanaged.

People at all levels need to be empowered to do their jobs. I think BUMED's responsibility, and any leader's, is to tell you what that job is: to set the focus, or parameters of the job, tell you what resources you have, and then stand back and let you do it. The Navy Medical Department's Mission and Vision statements, combined with our Guiding Principles, provide the focus. Now I need to make it easier for you to work at a local level, to have authority to work with the resources available, and to do what's best. If we all strive to do what we perceive to be right, because it's the right thing to do, we will obtain a quality of life for both ourselves and our customers far in excess of anything identifiable through inspections or productivity quotas.

Navy medicine's vision has been set. My job is to help you realize it. I would ask all of you to help me as well. When I came on board at BUMED, I found they—we—had set a headquarters vision "to be the best headquarters operation in the Department of Defense and to be recognized as such." We are going to make BUMED what our vision says it will be. We are going to be the best headquarters. Absolutely! Everyone is a customer of someone else: You are our customers. Help us serve you better; help us lead Navy medicine.

VADM Donald F. Hagen, MC

Below: **Secretary of the Navy H. Lawrence Garrett III presents VADM James Zimble with the Distinguished Service Medal.** ***Right:*** **VADM Zimble congratulates the new Surgeon General, VADM Donald Hagen, as NNMC skipper RADM David Lichtman (left) and Chief of Naval Operations ADM Frank B. Kelso II (right) look on.**



VADM Hagen Becomes Navy's 31st Surgeon General

VADM Donald F. Hagen, MC, a Vietnam veteran, took over the helm of the Navy Bureau of Medicine and Surgery on 28 June 1991, replacing VADM James A. Zimble, MC, as Surgeon General of the Navy.

The event took place in a traditional change of command ceremony, which featured H. Lawrence Garrett III, Secretary of the Navy, as keynote speaker. More than 1,000 attended the occasion, in the shadow of the 18-floor Tower at National Naval Medical Center, Bethesda, MD.

"The admiral takes over as the Surgeon General at an especially challenging time for the Navy and its Medical Department," the Secretary said. "It is a time when our resources are shrink-

Photos by HM2 Dan Kelly, NSHS

VADM Zimble gives farewell address.

ing much more quickly than our commitments, a time when visionary leadership and innovative thinking will be more vital than ever."

Garrett said that Hagen was an excellent choice as the Navy's 31st Surgeon General. "Admiral Zimble's shoes will be very capably filled by a man who is an extraordinary officer, leader, and physician," Garrett continued. "I have the greatest confidence in you, admiral, and I welcome you aboard with best wishes for continued success and my promise of continuing support for Navy medicine."

Garrett also lauded Zimble as a man who made things happen. "I am extremely distressed to see him go," the Secretary said. "Admiral Zimble is a dynamo, a fireball. Look at how far Navy medicine has come in the 4 years that Jim Zimble has been at the helm. Retention is up. Recruiting is up. Patient visits are up. Quality is up.

"The catalyst for that change, the motivating leadership, has come right from the top, from the office of the Surgeon General."

Zimble, who retired after more than three decades in the Navy, took over his new position later in July as president of the Uniformed Services University of the Health Sciences, the nation's only medical school for training doctors for career medical service in the armed forces.

The keynote speaker also praised the performance of Navy medical people in Operation Desert Storm. "To the entire nation's enormous relief, the naval medical talent standing by in the Gulf region did not have to show all of its stuff, but it was there, ready to provide the most sophisticated medical care ever available to American troops in a combat theater," Garrett said.

Hagen, in accepting his orders, said that as Surgeon General he would not be complacent about medical successes in Desert Storm.

"The job is not over," the new Surgeon General said. "We need to get involved with all of our people who deployed, to find out what worked and what did not. Our primary purpose is, and always has been, to support the sailors and marines in combat, and to ensure they are fit to fight."

His predecessor, Hagen added, was a legend in Navy medicine. "How do you follow a legend?" he asked. "It won't be easy, but Admiral Zimble has laid the foundation. The Medical Department leadership is on board. The stage has been set. Now we must all work to followthrough. Our people can make it happen and I will be proud to lead them."

The ceremonies were highlighted by appearances by the Navy Band and the Ceremonial Guard, the retiring of Admiral Zimble's flag, and the presentation of the national ensign that had flown over the U.S. Navy Memorial on 3 March, the 120th birthday of the Navy Medical Corps. The flag was passed from hand to hand down a row of sailors and chief petty officers to Zimble.

The Bureau of Medicine and Surgery, now in its 149th year, supports the work of more than 73,000 active duty sailors, reservists, and civilian medical personnel. □

—Story by JOC Walton Whittaker, BUMED Public Affairs. Photos by HM2 Dan Kelly, NSHS, Bethesda, MD.

Aiding the Aetas

A volcano drove them from their homes. Dump trucks from the Highway Department ferried them to safety in the small village of Poonbato, where they were provided with shelter and food. And 7th Fleet support units from the Subic Bay area provided free medical and dental care.

Until recently, these Aeta tribesmen had been living in the shadow of Mount Pinatubo, where they eked out a simple existence from upland farming. The volcano is sacred to the Aetas and when it began to show signs of life, many of the older ones wanted to remain in their own village. But according to Chito Balatay, an Aeta tribesman, the need to evacuate their homes soon became apparent to all.

"We didn't have medicines and we had a lot of medical problems," Balatay said. "We picked Poonbato because it was close to our village. My people are grateful. They feel the concern of these American brothers."

A large courtyard in Poonbato was transformed into a makeshift hospital and dental clinic. On the left were the doctors and hospital corpsmen examining dozens of eyes, ears, noses, and throats. They also doled out bottles of cough medicine, Tylenol, and other nonprescription drugs.

The right-hand side of the courtyard was dotted with dental chairs and also sported a table covered with a variety of instruments ready for action. The dentists' plan for the day was simple: administer anesthetics and pull any troublesome teeth. According to DTCM Henry Cuilty, aid projects such as this are low-investment, high-return propositions.

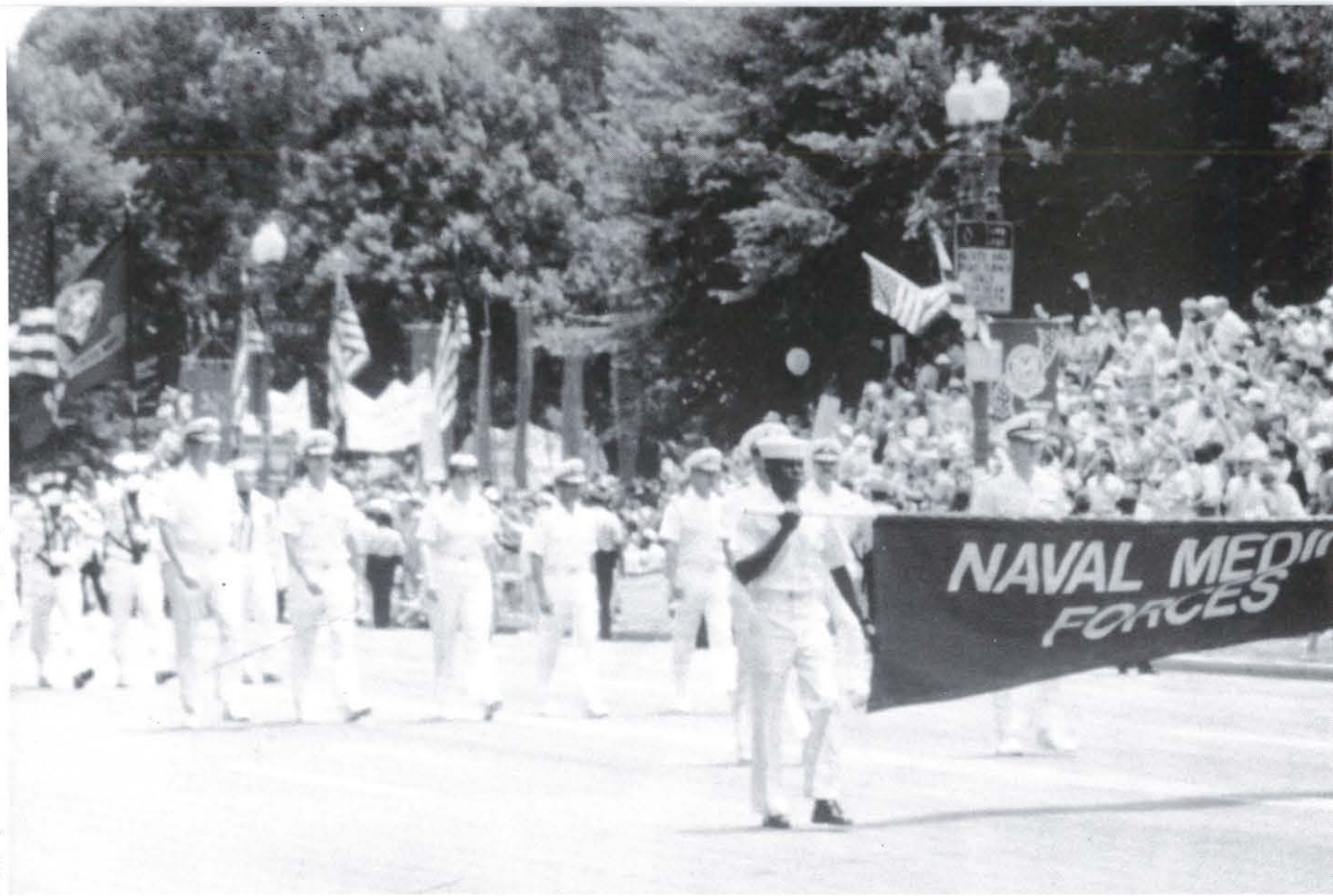
"It doesn't cost a lot," Cuilty said. "Most of the material comes from Project Handclasp. The manpower doesn't cost anything because it's done all on our own time. I look forward to these. It makes me feel good and I get a chance to see the provinces."

According to Chito Balatay, the Aetas will stay where they are for now. But the future of the tribe is still uncertain. "So far, there is no definite plan," he said. "The villagers will have to decide for themselves. We will have to wait and see what happens." □

—Story and photos by JO3 J. Vincent Dickens, Seventh Fleet Public Affairs, Subic Bay, R.P.

On 12 June 1991, after a bout of fitful small eruptions, Mount Pinatubo racked the Philippines with a series of major eruptions that continued for days. The eruptions spewed ash and rocks over a wide area and caused many earthquakes, forcing the evacuation of over 200,000 Filipinos. Furthermore, the United States eventually evacuated all personnel from Clark Air Force Base and many nonessentials from Subic Naval Base. The fact that Clark being 10 miles from the volcano was devastated does not bode well for the Aeta tribesmen. Some Aetas were confirmed as dead among the over 330 people killed by the volcano. Due to uncertainty about their long-term safety, the Filipino President, Corazon Aquino, recently decided to resettle 20,000 Aetas approximately 30 miles to the northwest of the volcano. However, the Aetas are spiritually tied to the volcano and it is still uncertain whether they will agree to the move.

Clockwise from top left: **HM2 Roberto Magcalas reads the recommended dosage on a bottle of cough medicine for an Aeta evacuee and her son; LT William Lyons administers an anesthetic to a Filipino man as his son looks on; HMCS Kathleen Noll and HM3 David Shelton break open a container of medical supplies for the Aeta tribe evacuated from the Mount Pinatubo volcano; and LT Wayne Boulton checks a young Aeta's heartbeat as the boy attempts to stay calm.**



Photos by HM1 Bill Williams and HM2 Skip Singleton, NSHS

Navy Medical Department Participates in Victory Parade

It took 5 weeks, 500 men and women, and a Navy officer who became an on-the-spot plumber, but when it was over Navy medicine had put on one of its finest shows ever.

"Magnificent," said RADM Robert W. Higgins, Deputy Surgeon General of the Navy. "It told a real story, a human story, of Navy medicine in support of Desert Storm forces."

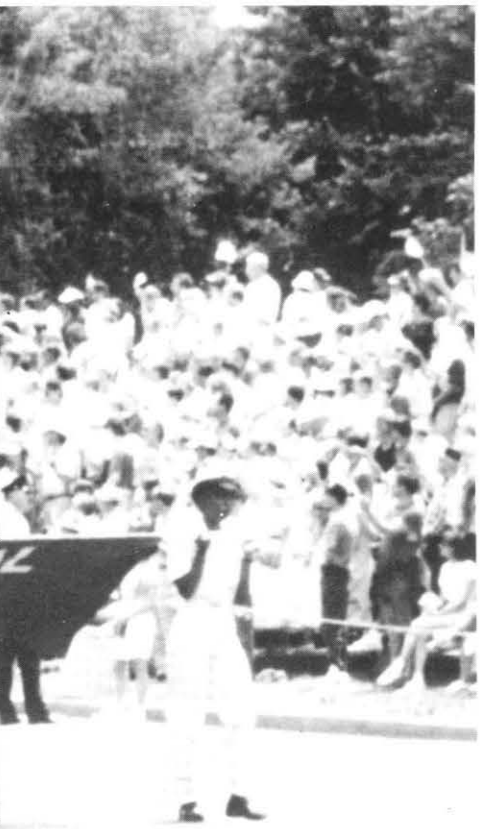
More than 200 Navy medical people, all volunteers—their white suits bright in the June sun—put their best foot forward at 116 steps per minute, joining 8,000 other soldiers, sailors, marines, and coastguardsmen in the mammoth Victory Day Parade along Constitution Avenue on 8 June 1991. It was the largest military parade in the nation's capital since World War II, and Navy medicine was smack in the middle.

"I have never experienced anything like it in my life," said CAPT Claire Purdy of the Nurse Corps. "People were shaking hands and wanted your autographs on anything—shirts, posters, caps, pieces of paper, books. It is a fantastic personal thing when people come up to you and say, 'Gee thanks, we're glad you're home!'"

Purdy and the rest of the medical team who marched and manned displays had their hands full. Although the celebration was to begin officially on Saturday morning, people flocked to the Mall and went through Navy exhibits on Friday night, with more than 45,000 going through Navy medicine's tents, even though all of the displays were not yet installed.

That was just the tip of the iceberg. During the next 2 days, over 100,000 poured through the five Navy and Marine Corps medical tents, conspicuously located by the Mall's carousel, directly across from the Smithsonian Castle and near the Metrorail entrance.

Long lines formed at 7:30 Saturday morning at a mock operating room,



RADM Robert Higgins, Deputy Surgeon General of the Navy (left) and VADM Donald Hagen, Surgeon General, examine Navy medicine display on Washington's Mall.

where visitors looked at dozens of medical instruments laid out and a lone operating table. HM1 Robert Perry was peppered with questions.

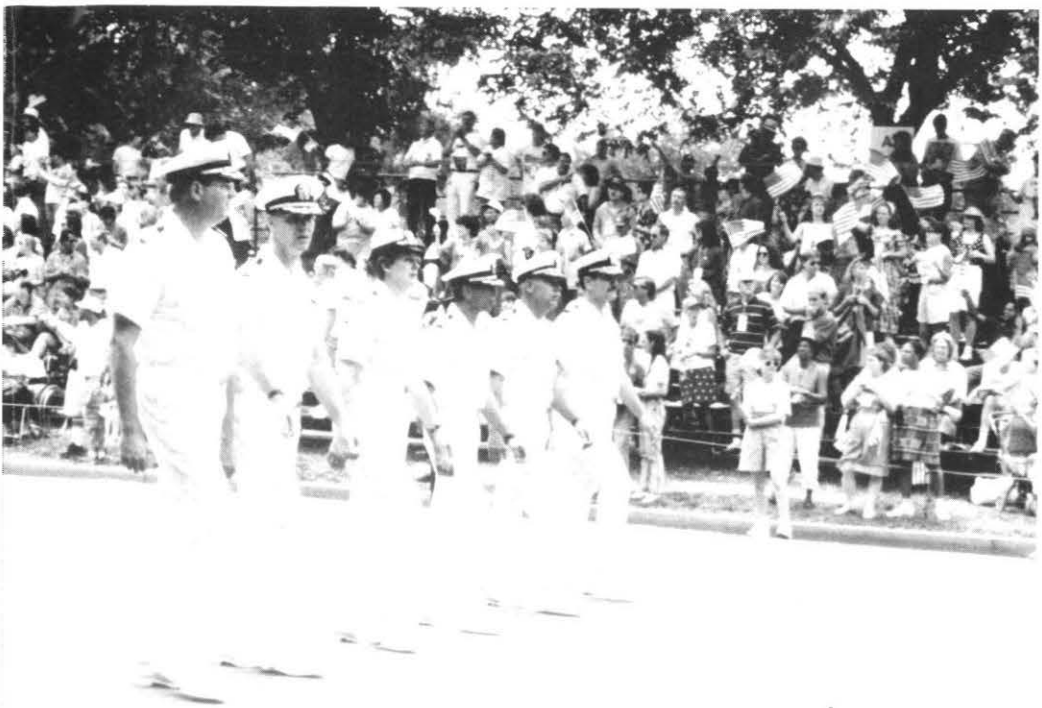
"How hot was the tent?" one boy asked. "The table seems small," said another. "What if you're 6 feet tall?"

"In 5 months in Saudi Arabia," Perry replied, "it sometimes got hot and, yes, the table would accommodate tall people, too.

"There have been long lines outside ever since we opened," Perry said. "I've had my picture taken lots and lots of times. It has been amazing, just amazing."

Nine-year-old Jacob Kramer of Silver Spring, MD, gave Perry a cap and asked him for his autograph. "My dad was in the Navy," the boy said. "He told me I should get your autograph."

In a camouflaged tent set up just as it was in Saudi Arabia, Isidore Zaiderman of Potomac, MD, stopped in front of a dental chair and equipment and spoke to DT3 Melissa Canady of the 2nd Dental Division from Cherry Point, NC.



Left: **A Navy officer answers questions on the hospital ships' exhibit.** ***Below:*** **Visitors gaze at the medical instruments in one of Navy medicine's displays.**

"I didn't realize there were dentists over there," he said, "but when you think about it, that would be a necessity. This is fantastic. It brings the war closer to home at a level we can relate to. I watched the war on television nearly 24 hours a day. This makes me feel almost like I was there."

Also popular were displays of scorpions, snakes, and insects collected by some of the medical staff, an exhibit from the Navy Blood Research Lab showing frozen blood, a show on desert survival techniques, photographs and slide shows of Navy medicine in action in the Gulf, an exhibit on the fleet hospitals and hospital ships, and a Humvee ambulance.

But much of what the Navy's medical people did was not in the public arena. Each day 24 Navy doctors, 22 Navy nurses, 8 Medical Service Corps personnel, and 75 hospital corpsmen treated visitors who fell ill to the June heat. Some worked 14 hour days. Altogether more than 100 celebrants were treated for cuts, headaches, heat, dehydration, and other complaints. Another 25 were transferred to Washington area medical facilities for more serious problems such as asthma and vertigo.

Photographing it all were sailors from the Medical Photography Branch of the Naval School of Health Sciences, Bethesda, MD. "My own family came in from Ohio just to see the medical displays," said HM2 Donald Singleton, one of the photographers. "They were overwhelmed at what Navy medicine did in the Gulf."

CAPT Harold T. Pheeny, MSC, team leader for the Action Committee set up by the Bureau of Medicine and Surgery to handle Navy medicine's participation in the event, said there were few glitches in the effort, which began just 5 weeks before the celebration.

"It looked smooth and impressive but the logistics kept us working evenings and weekends," Pheeny said. "At 7 a.m. on the day of the parade we discovered one of the 20-foot poles to hold the Navy Medical Forces banner to be carried in front of our marchers was missing. LTJG Mark Ulrich found a plumbing shop, acquired some pipe and had it cut and decorated in time for the parade. I doubt anyone knew the difference."

When it was over, just 100 days after the end of the war with Iraq, Victory Day had shown off its wares to 800,000 visitors and millions more on television. Patriotism ran amuck, 10,000 American flags were handed out along the 2½-mile parade route, 83 warplanes flew overhead, and the military men and women who participated devoured 40,000 pieces of chicken, 25,000 hot dogs, and 50,000 ice cream bars.

For Navy medicine, it was a great show and, officials said, well deserved. In the war, more than 12,000 active duty and reserve men and women in the medical community served in the operational theater. The fleet hospitals alone treated more than 32,000 patients, some of them for heat stress. Some of the civilian supporters at the parade got similar treatment from the Navy medical personnel who were once again standing by to assist. □

—Story by JOC Walton Whittaker, BUMED Public Affairs.

Bangladesh Relief Effort

David R. Klubes

On 30 April 1991, a massive cyclone struck the impoverished nation of Bangladesh. The cyclone brought heavy rains, 20-foot tidal waves, and 145 mph winds that ravaged this low-lying, overpopulated Third World nation. Although the true number of deaths will never be known, most estimates cite death tolls of over 100,000 people. After the cyclone dissipated, Bangladesh faced the crisis of keeping the survivors alive. Upwards of 10 million people faced death from starvation, lack of water, and disease because crops and food supplies were devastated, fresh water was contaminated, and the limited transportation infrastructure was all but destroyed. The Bangladeshi government was ill-equipped to deal with this crisis, lacking sufficient quantities of nearly every critical resource and possessing only six working helicopters.

Bangladesh received international help, but the concurrent Kurdish crisis diluted what aid was available. Therefore, the United States decided to provide aid to Bangladesh under the code name Operation Productive Effort/Sea Angel. This assistance reflected a growing belief on the part of the U.S. government that the military should be used for humanitarian missions in addition to its primary task of defending our national interests.

Amphibious Ready Group Three, an eight ship task force that was heading home after Desert Shield/Storm, was sent to help Bangladesh. Once they arrived, the amphibious ships sent ashore supplies and curative medical teams called Medical/Dental Civic Action Projects (MEDCAPS). By the time U.S. forces had pulled out, over 5,400 tons of food, water, medicine, temporary shelters, and other relief supplies had landed. The U.S. Navy also sent construction crews to evaluate the situation and give rebuilding advice to the Bangladeshis.

The efforts of the MEDCAP teams were very important to ensure the short-term survival of the population. However, the Navy recognized that long-term solutions were also necessary. One long-term solution was teaching the Bangladeshis preventive health care. Some specific preventive health measures for Bangladesh included water purification and

NEPMU 6

HM2 P. Helfrich and HM2 T. Hilber preparing water samples for analysis at an NEPMU 6 laboratory.

NEPMU 6

impeding the spread of communicable diseases. The Navy Environmental and Preventive Medicine Unit No. 6 (NEPMU 6) arrived from Pearl Harbor to teach the Bangladeshis about preventive medicine. NEPMU 6 also gave preventive health care advice and assistance to U.S. military personnel who were sent to Bangladesh.

NEPMU 6 consists of four teams, epidemiology, microbiology, entomology, and environmental health, that work in close coordination. For example, in Bangladesh the epidemiology team's mission was to locate the areas and patterns of diarrheal disease, the microbiology team was to determine which bacterial pathogens were responsible for the diarrhea, and the environmental health team was to show the Bangladeshis how to impede the spread of diarrheal diseases. The entomology team focused on determining the potential risks posed by vector-borne disease and operated somewhat independently.

In Action

NEPMU 6, led by CDR Kenneth Ockermann, MSC, learned of the imminent duty on 10 May, flew out the next day, and reached Bangladesh on 13 May. This unit was one of the first to reach the stricken nation and set up its base in the city of Chittagong, at what became JTF South. Actually, home base was at Bangladesh Air Force recruit training base. NEPMU 6's first priority was to initiate preventive health measures, such as sanita-

Left: **A cyclone-ravaged town in Bangladesh.**
Below: **The young and the old suffering from acute diarrhea at a Bangladeshi clinic.**

NEPMU 6

tion and water purification, for the hundreds of U.S. military personnel who would arrive shortly.

After working to protect U.S. personnel, NEPMU 6's 15 members fanned out across the nation to help the Bangladeshis. About half the members went to Sandwip Island which, according to the Bangladeshi government, was one of the hardest hit areas. Other members were sent out to other islands and mainland areas, generally spending a few days in each area before moving elsewhere.

Their primary mission centered on mitigating the effects and spread of communicable disease, especially the diarrheal diseases spread by contaminated water. The unit would attempt to institute general public health measures, followed by specific sanitation measures. Above all, this unit stressed education in an attempt to have a long-term effect on Bangladesh.

Epidemiology

The epidemiology team worked in conjunction with epidemiologists from the International Center for Diarrheal Disease Research, Bangladesh under a sponsorship arranged by the U.S. Agency for International Development (USAID). This joint effort traveled throughout the cyclone damaged area and discovered, not surprisingly, that the number of Bangladeshis infected with diarrheal disease corresponded to the depth of the water tube wells they were using. With shallow wells (anything down to approximately 40 feet) the disease rate was high. When the locals relied on deep wells, with depths up to 1,500 feet, diseases were less prevalent. Obviously, the shallow wells were more susceptible to bacterial contamination from organic material (including fecal matter and animal and human remains), which led to higher disease rates.

The joint team's report resulted in money being allocated by USAID for the construction of new deep wells instead of the more usual shallow wells. Additionally, the joint team validated the disputed theory that disease rates are lower where wells have been disinfected with bleach powder. Hopefully, now the Bangladeshi government will utilize bleach as a disinfectant on a more widespread basis.

Environmental Health

Because the tube wells are the main source of water, the environmental health team worked hard to teach the Bangladeshis the importance of keeping the wells clean. They taught two methods of decontamination, chlorination and water purification tablets. Team members also taught the Ban-


Bangladesh
International boundary
International boundary, in dispute
District boundary
National capital
Kushtia District capital
Broad-gauge railroad (1.676 meters)
Narrow-gauge railroad (1 meter)
Road
Track
Airfield
Principal port
Populated places
Scale 1:1,750,000
Nepal
Bhutan
Thimphu
India
Burma
Bay of Bengal
KHASI HILLS
BARAIL RANGE
MIZO HILLS
CHITTAGONG HILLS
SUNDARBANS
Sandwip Island
Dinājpur
Rangpur
Bogra
Rājshāhi
Pābna
Kushtia
Jessore
Khulna
Faridpur
Dacca
Tangail
Mymensingh
Sylhet
Comilla
Noākhāli
Barisāl
Patuākhāli
Chittagong
Rāngāmāti
Rāmgarh
Bandarban
Calcutta
Howrah
Siliguri
Jalpaiguri
Cooch Behār
Saidpur
Jamālpur
Sirājganj
Kushtia
Jessore
Khulna
Chāndpur
Agartala
Silchar
Chālna Port
Cox's Bāzār
Purnea
Katihār
English Bāzār
Krishnagar
Burdwān
Barrackpore
Kharagpur

LCDR R. Linville

CDR Ockermann helps the locals drill a deep tube well.

gladeshis to construct latrine facilities far enough away from the wells to prevent contamination. Furthermore, basic hygiene concepts, such as handwashing, had to be included in the education program.

Salt water from the tidal waves also contaminated many of the wells, making the water nonpotable. Lack of fresh water created a severe crisis, only alleviated when water was either shipped in containers or a few reverse-osmosis purification units were set up. However, CDR Ockermann noted that by the time they left on 31 May, the water had receded and the salt water contamination problem for newly dug wells was dissipating. Moreover, the wells could be decontaminated by a flushing procedure. Although salt water contamination is more of a short-term problem, measures must be taken to lessen the effects of salt water contamination during the next flood.

Microbiology

The main objective of the microbiology team was to determine the specific bacterial pathogens that caused the diarrheal disease in areas identified by the epidemiology team. To accomplish this objective, the team took specimens from diseased patients and cultured them at a laboratory set up first at Chittagong and then Sandwip. The cultures were also tested for antibiotic susceptibility. Then the team reported to U.S. Navy and Bangladeshi definitive health care personnel on cases and probable cures for the diarrhea.

Entomology

The entomology team initially focused on determining which vectors are indigenous to Bangladesh. Although the flooding suppressed many of the vector populations, NEPMU 6 discovered that most of the vectors made a quick recovery. The team also attempted to educate the population about controlling insect vectors, pointing out the relationship between sanitation and fly breeding, and the role flies play in vectoring many deadly diseases. Other forms of education were protective in nature, such as using mosquito nets and insect repellents.

Although some effort was made to eradicate mosquitoes, especially at JTF South in Chittagong, time constraints, the overwhelming extent of the problem, and logistical complications left the work uncompleted. However, the team was more successful in controlling the filth fly population. Most of this work centered on eradicating flies around hospitals and clinics. The use of Flytek, a granular bait very attractive to flies, was especially effective.

In Retrospect

The language barrier was a problem that hindered education efforts. Although NEPMU 6 occasionally found proficient translators, its members often had to rely on hand signals to convey ideas. Obviously, even with ad-hoc translators, educating the masses was not optimum. The language problem should become a high priority item in the planning stages of the next humanitarian effort.

NEPMU 6 was happy to report, though, that by the time they left Bangladesh, the overall situation had improved considerably. CDR Ockermann had previously visited Bangladesh to study existing and potential health problems. Based on this past experience, he estimated that the situation on 31 May had almost returned to what for that nation was a normal state of sanitation and health care.

However, the real question concerning NEPMU 6's effectiveness will be whether the Bangladeshis learned any lessons. Bangladesh is an impoverished Third World nation, where sanitation conditions, even during the best of times, fall far short of any developed nation. Not only are there little or no resources available for the construction of more advanced sanitation efforts and vector control, but the people neither comprehend the significance of nor see the need for sanitation and vector control. It is unrealistic to assume that NEPMU 6 made significant inroads in the Bangladeshis' health behavior simply because there was not enough time to overcome the practically insurmountable barriers. However, NEPMU 6 did provide meaningful sanitation help to a portion of Bangladesh. Finally, it is hoped that NEPMU 6 implanted some basic concepts of sanitation, such as keeping wells and latrines separate. If the Bangladeshis heed just the sanitation lessons, their baseline living conditions can only improve. □

Mr. Klubes is assistant to the Command Historian, Bureau of Medicine and Surgery, Washington, DC 20372-5120.

Nursing Care of Iraqi Prisoners of War

CDR Ronald L. Van Nest, NC, USN

Providing nursing care to enemy prisoners of war is a rare experience in a military nurse's career. This article is presented as a historical anecdote of the situations encountered by the Navy nurses, corpsmen, and dental technicians of Echo/Lima Company, First Medical Battalion, First FSSG during Operation Desert Storm.

In 4 days, over 300 Iraqi enemy prisoners of war (EPWs) and 100 Americans were treated in the Navy-Marine Corps Field Trauma Center, Al Khanjar, Saudi Arabia, which was approximately 125 miles west-northwest of Ras-al-Mishab, on the Kuwait border.

The patient interactions created personal, professional, ethical, emotional, and physical challenges unlike what most health care workers have ever experienced. The problems fell into three broad categories: language barriers, cultural differences, and military issues. Ambivalence about ours and their health care role and military role permeated the entire atmosphere.

In August and September 1990 we were repeatedly told by "reliable sources" that care of EPWs was an Army issue and that we didn't have to be concerned. Knowing that, in the 4½ months leading up to the war, no preparation was made for this eventuality. When the war started, our unit was in Ras-al-Mishab where we received our first "few" EPWs. Since we were

CDR Chip Beck, USNR

Navy medical personnel evaluate a wounded Iraqi POW during the triage process.

CDR Chip Beck, USNR

Al Khanjar Navy-Marine Trauma Center

unprepared for their arrival, we had to quickly reconfigure the hospital camp to ensure the safety of all concerned. The bombing of the Marine barracks in Beirut was very prominent in our minds, as we strategized on ways to protect ourselves from any radical EPWs attempting an impulsive mass murder/suicide. In addition, we took measures to protect them from any potential irrational behavior on the part of the American patients. Since any hard fighting had yet to begin, we could not predict how bitter the conflict would become or how much hatred would be built up on our own troops. We moved the EPW tent to the edge of the camp, out of the traffic pattern of personnel walking around the camp and gave the tent a sequential number instead of referring to it as the "POW Tent." We allowed no visitors and kept all nonessential personnel away from the area. Fortunately, there was never a threatening incident.

Our staff received excellent refresher training by Marine Corps lawyers on the requirements of the Geneva Convention and the Laws of War. There was never any question about how we should behave with enemy prisoners as patients. However, at that time, we had no idea of the numbers of EPWs that would eventually come to us.

Shortly before the ground war, we were suddenly moved to Al Khanjar in preparation for the now famous end around sweep into southwestern Kuwait. We were there only a few days before the ground assault began. This desert trauma center (12 operating rooms and 270 beds including a 36-bed ICU) was hastily assembled and the staffs of four and a half medical companies were brought together as one unit. This was a marvel, not only in combat engineering but also in human dynamics, a credit to our leaders.

We were told to expect over a thousand casualties a day, a daunting number, considering our small size. To our surprise, when the large numbers of casualties started coming in, they were Iraqi.

CDR Chip Beck, USNR

Marine recuperates on one of Al Khanjar's wards.

Language

The immediate problem to be dealt with was the language barrier. Arabic is unlike any western language in both its phonetics and alphabet. A familiarity with any of the western languages was worthless. Very few of the EPWs spoke English or understood it, and getting a sufficient number of translators was a constant problem. If we had an inkling that we would have been caring for Arab patients we could have received crash courses in Arabic in August and September, when there was little else to do.

We learned that there were different languages and dialects among the prisoners, and many of the EPWs couldn't communicate with each other. Some of them helped with translation as did Kuwaiti medical students.

Phrase flash cards were created with the assistance of our Saudi hosts. These Arabic translations of phrases commonly used in various nursing situations were very helpful. Some patients, once they understood what we were trying to communicate, would give explanations to their friends.

All the EPWs were awed by our technology. They were incredulous that we had so much medical equipment in tents in the middle of the desert. There were times that 12 operating rooms, set up where they were, even amazed us!

Cultural Issues

The Arabic culture forbids the consumption of pork and many of the MREs contained pork products. Initially, some of the wards removed the pork in an effort to accommodate their patients' beliefs, but there weren't enough MRE's to continue that practice. We gave the patients whatever we had, and they devoured everything.

The patients had a total lack of dental hygiene, some needing antibiotics just for their mouth infections. Skin lesions of all kinds, as well as body lice were common among all the EPWs. The staff had to wear gloves, even when touching the patients' blankets. It was another obstacle to providing good care, and it slowed down nursing care, especially when we began to fill our wards. The staff felt dirty and itchy when they got off their 12-hour shifts. To complicate matters further, since water had to be trucked over 100 miles to us, we were on "water hours" and showers were not permitted until the third day of the war.

In the Arabic culture, the right hand is the clean hand and the left hand is the dirty hand; patients would not accept an I.V. in their left arm. They also believe that all their body parts should be buried with them when they die, creating a problem in the case of amputations. On the humorous side, men in the Arabic culture express their emotions and gratitude to other men by kissing. Some patients kissed their corpsmen. It was a bit unnerving and resulted in much conversation and teasing.

We were curiously surprised to note that patients showed little interest in helping other patients. There was an obvious lack of team spirit among the prisoners that was most unusual for us, who had become a part of the Marine Corps *esprit de corps*. We had to prompt them to help their fellow patients, especially when they were being moved for medevac. In contrast, there were many heartening moments when injured marine patients voluntarily left their tents to help Iraqi patients onto buses. It was very touching to see an injured American put the arm of an injured Iraqi over his shoulder and help him hobble to an ambulance.

The patients didn't know how to act. Were they patients or prisoners? Having an armed marine guard in the tent didn't help their confusion. To the Marines, they were prisoners and to the nurses, they were patients. When the staff was very occupied in patient care, the guard was an ever-present reminder that the patients had the potential of becoming very dangerous. When the marine guard was a woman, the patients had their own culture shock.

The nurses found that the patients were tired of war. They were depressed from the protracted Iran-Iraq War . . . and now this. Malnutrition was obvious. The long period of embargo and the air war had taken its toll. Many had spent a lot of time living in bunkers before the ground war had even started. We had heard and felt the concussions of the relentless bombing from both our camps and felt shock waves of shell bombardments from the battleships when we were in Ras-al-Mishab. Now the aftereffects were visible.

Military

The medevac system was slow for EPWs. By regulation, we weren't permitted to use the URGENT category for EPWs. Typically, it took 24 hours to get the EPWs moved out, while it took only 8 hours to get the Americans out. As the hospital began to fill up, this began to bog us down.

Caring for so many patients with names so difficult to pronounce was another stress. They were accounted for solely by number. Keeping track of patients in the medevac system by number was a labor-intensive nightmare, especially when moving them in the dark of night to ambulance buses.

Since our role was to stabilize and medevac, there was little time to develop a close nurse-patient relationship. This drawback however, brought the ward corpsmen closer together as a team. They were able to see that the efforts of the group in caring for large numbers of patients was more important than their own personal success with an individual patient. In a very short time group cohesiveness became very tight.

We treated our patients as we would want to be treated ourselves, or as we hoped our American wounded were being treated in Iraq. We were pleased that we had enough staff, beds, and equipment to care for both Americans and Iraqis without regard for nationality. They were all treated as best we could, and no Americans received a reduced level of care because we were also treating Iraqis.

Many of the nurses felt very comfortable taking care of EPWs and believed they were involved in a humanitarian effort; others felt they might be criticized when they got home, for what might be perceived as having aided the enemy.

Most of us, however, felt that we were actively participating in a postwar peace effort and were spreading American goodwill in the Middle East. Even those nurses who had some misgivings about caring for Iraqi patients had their doubts resolved when they witnessed the pathetic state of these patients upon arrival. Their eyes showed a long-term depression and hatred for war. They were grateful to be in American hands.

Knowing what we knew of the Iraqi military-political system, the nurses and corpsmen were able to care for these patients by seeing them as innocent victims of Saddam Hussein's political insanity. There was also a certain sympathy for them since they were fellow military personnel, who just happened to be on the wrong side.

A 4-day war and a few postwar days of incidental casualties created a lifetime of memories for a group of very dedicated, hard-working Navy nurses and corpsmen. Whenever medical personnel have to care for prisoners of war in the future, hopefully this article will provide some assistance in planning for it, as well as giving a bit of emotional support, across time, from a group of people who have been there before. It was a challenging, exciting, stressful, frustrating, and exhilarating experience all wrapped in a single event. □

During Desert Shield CDR Van Nest was the Senior Nurse Anesthetist and Senior Nurse Corps Officer in the First FSSG. During Desert Storm he was also the Director of Nursing Service.

Historian Interviews Iraqi Prisoner of War

I read with interest the above article (March-April 1991) and would like to add some information which may not have been available to the author. I was responsible for the resuscitation area at the Al Khanjar medical facility in Saudi Arabia and was well acquainted with the individual whom the author interviewed. The "medical officer" was not initially considered an EPW (enemy prisoner of war) since medical personnel are considered "detainees" under the Geneva Convention and are afforded separate treatment. He arrived at the Al Khanjar center carrying two medical texts and stated that he was a physician. We briefly used his limited facility with the English language to assist us in communicating with the many EPWs for whom we were caring during the ground war. Occasionally, he was asked to assist in simple wound care for some of the EPWs, and it was readily evident that his medical knowledge and dexterity were not what was expected of someone with more than rudimentary medical knowledge. His answers to some of the questions in the interview are indicative of his confusion with medical training and other topics.

Some of the enlisted EPWs reported that the "medical officer" was actually a Republican Guard *line* officer with over 10 years of service (including the Iran-Iraq war) and the rank of major, not a medical officer at all. This was confirmed (by intelligence officers) and the major was escorted to another location for processing.

I suspect that this bright officer attempted to impersonate a physician so that he could receive the benefits of a different Geneva Convention category. I feel that his own enlisted troops reported the charade because the treatment they received from the Americans at the Al Khanjar facility was so compassionate that there was a very marked contrast when compared with their relationship with their own officers and medical personnel.

CDR D.C. Arthur, MC, USN

The Navy's Emergency Number

CAPT Marlene Coleman Huss, MC, USNR
CDR Vladimir Nacev, MSC, USN

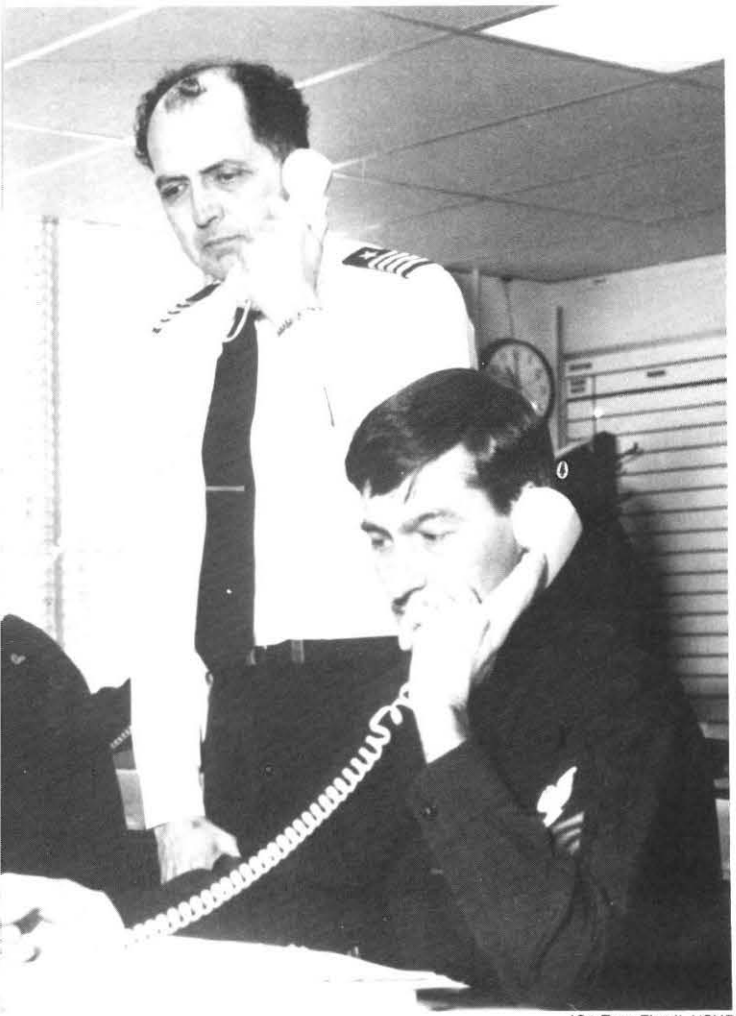
". . . deaths of 47 sailors in an explosion aboard USS Iowa *(BB-61), April 1989 . . . ." ". . . USS* Conyngham *(DDG-17) . . . one officer killed and 18 crewmembers hospitalized . . . ."*

When a crisis occurs which may involve your loved one, it is comforting to pick up the telephone, call a 1-800 Hot Line assistance telephone number and speak to someone who not only understands and cares but can also answer your questions. The Navy's Emergency Coordination Center (ECC) provided up-to-date information regarding the general status of Navy personnel participating in Operation Desert Shield/Storm and also ensured that callers' concerns were addressed with understanding, compassion, and reassurance.

ECC, located in Washington, DC, activates during international conflicts, accidents, incidents, or military operations when the potential exists for large numbers of casualties. ECC has been operational for more than 24 years. Staffed by active duty Navy personnel from the Bureau of Naval Personnel, usually only for a 3- or 4-day period, their job is to provide current information and support for mass casualty situations. The center has the latest communications electronic technology and contains an automatic telephone sequencing device, capable of handling 28 calls to the toll-free number simultaneously. Telephone watch standers can communicate with 14 callers, while 14 other callers are placed on hold and answered in the order received. ECC's toll-free number is distributed to all national, local, print, and television news media.

The 65-member Naval Reserve Unit, NR NMPC-4 Component 606, which performs reserve training duty in Washington, DC, had first received orientation to the ECC operations in December 1990. On 16 Jan 1991, when the bombing raids began over Baghdad and other Iraqi cities, a late night "call down" from the unit commanding officer went out to all unit personnel to activate ECC immediately.

By the next morning naval reservists responded, putting their lives on hold to assist others in need. They reported to ECC to staff a 24-hour, 7-day a week telephone watch. The reservists came from a variety of civilian occupations and backgrounds, including doctors, lawyers, executives, fire fighters, housewives, machinists, correction officers, nuclear engineers, psychologists, and social workers.



JO1 Tom Ekvall, USNR

CAPT Ramon Garcia (center), LCDR Jonathan McMack (left), and Petty Officer Ronald Heinkle man the phones.

Operation Desert Storm was the first time the Navy operated ECC on a continuing basis. The Navy responded to the crisis, and, additionally, to the emotional needs of family members as well. A full watch team was in place by the next morning, 17 Jan 1991, after the war had begun, manning the phones.

During the first day of Operation Desert Storm, the Navy's ECC responded to more than 5,000 calls. By the end of the first 30 days, more than 100,000 calls had been received. By 3 May that number had risen to 144,872. Callers asked for general information about the Persian Gulf crisis, others sought reassurance. ECC personnel also listened attentively to angry callers and to pros and cons concerning the war. Often they patiently received "advice for the President."

There were emotional stresses on both ends of the telephone, not only for caller, but also for receiver, who often had but a few seconds to regroup before answering other calls. The phone watch standers quickly grew aware of the importance of human relations training in dealing with the emotional state of persons calling for assistance.

As CAPT Charles R. Grutzius, commanding officer, NR NMPC 4 Component 606 said, "Hot line training was initiated to assist phone watch standers to better understand and be as empathetic as possible with family members who experience emotional distress." Training is also valuable to assist our reservists who helped them handle their lives, stresses, and to prevent burnout.

An active duty chaplain was available 24 hours to provide counseling support to next-of-kin and distressed callers. As LCDR Chris Xenakis, CHC, USNR, aptly said, "Although the war was usually the presenting issue, callers often had a variety of stressful subjects on their minds. Many times in order to provide a proper and complete response to a given phone call, ECC staff had to do a bit of research and networking of their own."

CDR James C. Bryant, MSC, USN (Ret.), provided invaluable communication skills training for ECC watch standers answering phones. The major goals of the training were:

- To help reservists improve communication skills with the gravity and stresses of Operation Desert Storm.
- To be as sensitive and empathetic to the feelings of the caller.
- To ensure that telephone watch standers recognize the symptoms of emotional and physical stress in callers as well as in themselves.

According to CDR Bryant, the callers need to share their feelings with someone who knows how to just listen and care about the way they feel. This training was essential to the overall effectiveness of ECC and its staff. An information manual will soon be available for use in the future activation of ECC with updating periodically planned. □

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Treating the Psychologically Wounded Warrior

CDR Raymond N. Sampson, MSC, USN

The Gulf war to liberate Kuwait was successful. Although casualties were light, some of our combat troops are now beginning to present with symptoms of post-traumatic stress disorder (PTSD). From past conflicts, we know that approximately 15 percent to 60 percent of all casualties have symptoms of acute PTSD.(*1,2*)

According to the *Diagnostic and Statistical Manual of Mental Disorders*—3rd ed revised (DSMIII-R),(*3*) the essential feature of PTSD is the development of distressing symptoms following some traumatic event. Examples of a "traumatic event" include combat or treating those who have been seriously injured in combat. This means that we care-givers are also susceptible to PTSD. We can share the same psychological and emotional experiences of those in combat. However, our problems may go unrecognized and some of us may be afraid to seek help.(*4*)

The distressing symptoms seen in PTSD patients involve "reexperiencing the traumatic event, avoidance of stimuli associated with the event or numbing of general responsiveness, and increased arousal."(*3*) The diagnosis of PTSD is not made unless the symptoms have lasted more than a month. The disorder can also become chronic or have a delayed onset.

Since some of our combat veterans are now presenting with symptoms of PTSD, it seems prudent to review how PTSD is identified and treated.

Identification

During an initial interview of PTSD patients, clinicians may see the following symptoms(*5*):

- ***Isolation.*** Report few friends and may feel old, isolated, or distant from their peers.
- ***Rage.*** Frighten themselves or other with their anger; strike out at others for no apparent reason; question their own sanity.
- ***Avoidance of Feelings.*** Feel alienated or emotionally dead, unable to experience the joys of life.
- ***Survivor Guilt.*** May wonder: "Why did I survive when others did not?" Historically, corpsmen and medics have suffered from some of the most intense survivor guilt. They are given a few months training and then told to save lives on the battlefield. When they fail, these young men may blame themselves for their "incompetence."
- ***Anxiety Reactions.*** Are hypervigilant and may evidence a startle reaction to sudden sounds or noises; fear being out in the open; may sleep with a weapon.
- ***Sleep Disturbance and Nightmares.*** Repetitive dreams of the traumatic event(s), dreams of being shot at or of being left with an empty weapon and unable to run.
- ***Intrusive Thoughts.*** Replay problematic experiences over and over again and are unable to put such thoughts to rest. Some will have short periods (a few seconds to a few hours) of dissociative states (flashbacks). During these

flashbacks they will actually reexperience the past events of combat or the past events of treating combatants.

Military health care providers will see more dissociative symptoms than anxiety symptoms in PTSD patients.(*6*) Most of the DSMIII-R list of symptoms associated with PTSD resemble those that characterize dissociative states. Examples include reexperiencing the event through intrusive recollections, nightmares, flashbacks, emotional numbing with feelings of detachment or isolation, stimulus sensitivity with the avoidance of environmental cues that are associated with recollections of the traumatic events, and difficulty concentrating.

The dissociation defends the consciousness from the experience of the painful event(s). Both the memory and the affect associated with that memory become dissociated. However, since memory and affect are linked, when one is accessed (such as the memory) the other (such as the affect of the experience), is also activated. This has important implications for treatment.

PTSD patients can often seem preoccupied with internal thoughts or images, and some of these patients will hear voices. Such PTSD symptoms resemble those of schizophrenia but differ in that the disturbing thoughts and images are all connected with the traumatic event. In addition, the bizarre symbolic images and thought processes characteristic of schizophrenia are absent in even the most severe PTSD cases.(*6,7*)

PTSD patients are often believed to have a personality disorder. A differential diagnosis can be difficult, particularly if you do not have a thorough knowledge of the person's pre-service history. Unlike the PTSD patient, the patient with a personality disorder tends to seek advantage from his or her disorder. These patients typically externalize their angry feelings in a way that shows little concern for others. They experience little or no guilt. Their expressed angry feelings and aggressiveness are more egosyntonic. On the other hand, PTSD patients have a relatively healthy character structure. They are capable of insight into their problematic behavior and accept responsibility for it. Consequently, they are more likely to experience guilt.

Minnesota Multiphasic Personality Inventory (MMPI) Test Results.

PTSD patients often display an "8-2" profile with significantly higher elevations on all clinical scales. Keane, Malloy, and Fairbank (*8*) created a decision rule for classifying PTSD sufferers which requires an *F* scale score of at least 66T, a scale 2 of at least 78T, and scale 8 of at least 79T. This rule correctly identifies 74 percent of all PTSD patients. Fairbank, McCaffrey, and Keane(*9*) found that the above decision rule, together with scale *F*, had the ability to distinguish between actual PTSD patients and patients who had been instructed to feign the symptoms of PTSD with greater than 95 percent accuracy.

Treatment

Even if you are intending to treat the PTSD patients with group therapy, you will need to initially see these patients individually in order to get their story and be reasonably sure of your diagnosis.(*10*) For example, you would not want to place a patient with a personality disorder in a group for PTSD patients, since that would tend to undermine the progress of the PTSD group.

Individual Therapy. Individual treatment strategies that have proven effective include *exposure* strategies such as systematic desensitization, flooding, and implosive therapy (with relaxation before and after each exposure to the painful event), *cognitive restructuring* (examination of life assumptions and disputation of interpretations and overgeneralizations), and *skills training* (relaxation, anger management, and communication skills).(*6,10-15*)

Earlier I mentioned that the dissociated memory for a painful event automatically accesses the affect associated with that memory. Memory and affect come as a unit, a single experience. This means that if you have the patient repeatedly imagine the painful event or access the event, from a formal heterohypnotic induced state, some control is being introduced into the process since the patient is willfully accessing the painful event. This change will result in a diminution of the affect associated with the memory of the event. Further diminution is seen whenever you have the patient make any alteration in how the memory is viewed (reframed) or whenever the patient imagines any alternate outcome to the actual memory. This remembering, repeating, and working-through process puts the painful memory in a different perspective and results in a therapeutic outcome.(*6,11-13,15*)

For those patients who are experiencing survivor guilt, the therapist is unlikely to get anywhere if he or she directly attacks their survivor guilt. Trauma victims need to hold on to guilt, and it may be therapeutic for the patient to do so, at the same time experiencing sadness while the therapist attacks the issue of responsibility. The therapist needs to leave the patient feeling that he or she did the best they could given the resources and circumstances.(*10*)

Medication. Psychotropic medications should not be routinely prescribed. They should be used to treat only those symptoms of anxiety, depression, and sleep disturbance that seriously interfere with other modalities of treatment, or when those symptoms seriously impair the person's work or social functioning.(*16*)

Group Therapy. Group treatment typically involves short-term, closed groups, lasting from 10 to about 12 weeks. A structured group with specific goals and tasks is recommended. Jelinek (*17*) describes a group that has two separate dimensions: a social/interpersonal dimension and a task/functioning dimension. In outline form, they look like this:

A. Social/Interpersonal Dimension (consists of five phases).

1. *Dependent phase:* avoid opening traumatic issues for the first two sessions and focus on hope and fact that things will get better.

2. *Conflict phase:* lasts about 2 weeks. Here you see differing views and power struggles.

3. *Sharing/working phase:* lasts about 2 weeks. Members take more risks by disclosing, and they take comfort in helping each other.

4. *Cohesion phase:* group has an identity. Interaction is freer and socialization may occur outside the group. This phase is characterized by a lot of hard work on psychological issues.

5. *Independent phase:* termination of the group and generalization of treatment results.

B. Task/Function Dimension (consists of five phases).

1. *Orientation phase:* teach members about procedures and group format.

2. *Organization phase:* discuss decision-making rules, leadership roles and problem-solving procedures.

3. *Data flow:* members begin to disclose more of their personal traumas.

4. *Problem-solving phase:* help members find new ways to look at experience.

5. *Termination phase:* end the group and ensure feelings of security about termination and generalize treatment results to the outside world.

The social/interpersonal and task/functioning dimensions must interact in a balanced manner throughout the life of the group in order to achieve the best results.

Other group models may be used when working with PTSD patients.(*18*) In either case, the work can be intense and rewarding for all concerned.

While we are providing the best care possible to traumatized patients, it is just as important to take care of ourselves. None of us are immune to the effects of burnout when treating traumatized patients.

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Worst California Measles Epidemic in 25 Years

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LCDR Linda G. Clever, MSC, USN
LCDR Jeffery P. Struewing, MC, USNR
LT John F. Kulhenkamp, MSC, USNR

Measles, a potentially fatal, highly contagious childhood disease continues to plague mankind despite the availability of effective vaccines for over 20 years. During the first 5 months of 1990, health care providers in California reported over 2,392 confirmed and 1,160 suspected measles cases, with at least 37 measles-associated deaths. The State Health Department reported this to be the worst measles epidemic California had experienced in 25 years. From 1 Jan to 11 May 1990, San Diego County alone had reported over 768 suspected measles cases, and at least three measles-associated deaths. As of 31 May 1990 the following California counties had reported epidemics or outbreaks of measles: San Diego, Los Angeles, San Bernardino, Riverside, Orange, Imperial, Santa Barbara, Alameda, Fresno, Kern, Stanislaus, Santa Clara, San Joaquin, and Contra Costa. This brief report summarizes the successful interventions Navy preventive medicine made during the California epidemic.

In late January 1990, the first Navy suspected measles cases were reported. Navy preventive medicine quickly took aggressive action. The Navy Environmental and Preventive Medicine Unit No. 5 (NEPMU 5) in San Diego, CA, in consultation with Navy infectious disease and epidemiologic experts at other commands, developed a comprehensive plan of prevention. The plan was presented in two messages from NEPMU 5 to California Navy hospitals and to key Navy and Marine Corps commanders in California (NAVENPVNTMEDU Five San Diego CA 271505Z Feb 90 and 162300Z Apr 90).

The plan called for increasing medical provider awareness and reporting of suspected measles cases. Clinical personnel were reminded that measles was a reportable disease by NAVMEDCOMINST 6220.2A and that NEPMU 5 and county health departments were to receive disease reports. Health care providers were encouraged to obtain acute and convalescent sera on all suspected measles patients.

The prevention plan adopted many of the measles outbreak control recommendations of the Centers for Disease Control's Immunization Practices Advisory Committee.(*1*) In California counties where measles epidemics involved children less than 1 year of age, the age of first dose of measles vaccine was lowered to 6 months. Monovalent measles vaccine was the preferred vaccine for children 6-11 months of age, although MMR (measles, mumps, rubella) could be substituted. Children vaccinated at 6-11 months were vaccinated again at 12-15 months of age. Consecutive measles vaccinations were to be at least 1 month apart.

NEPMU 5 recommendations included a second dose of measles vaccine (preferably MMR) for Navy dependents 4-18 years of age. College students and students of other post-high school educational institutions were also encouraged to receive a second dose of MMR (or to have documentation of two doses of vaccine after 1 year of age). For other adult beneficiaries one dose of vaccine was encouraged, but a mass revaccination campaign was not recommended, except for certain high-risk groups (health care workers, day care workers, others exposed to a measles case, etc.).

The prevention plan recommended that the medical records of all active duty personnel born after 1956 and living in California counties with measles epidemics be reviewed. If these personnel had no record of measles vaccination since entering service, or record of a physician-diagnosed case of measles, or no proof of immunity by serologic test, they were to receive one dose of measles vaccine, preferably MMR. Persons born before 1957 were likely to be immune to measles because of exposure to natural disease during childhood. However, key military personnel, health care workers, or others at especially high risk of exposure who were born before 1957 were encouraged to receive at least one dose of vaccine or serum antibody testing and selective vaccination of nonimmune individuals.

Preventing Measles at Naval Hospital San Diego

Responding to the measles epidemic, the preventive medicine department at Naval Hospital San Diego (NHSD) screened hospital personnel health records and formed mobile shot teams. The shot teams moved throughout the facility administering MMR vaccinations at work sites. In early March the shot teams administered approximately 1,6000 MMR vaccinations in a nine working-day period. Hospital staff were informed about the epidemic and prevention plan through a series of hospital newspaper articles. Whenever and wherever patients were examined, health care workers screened patient medi-

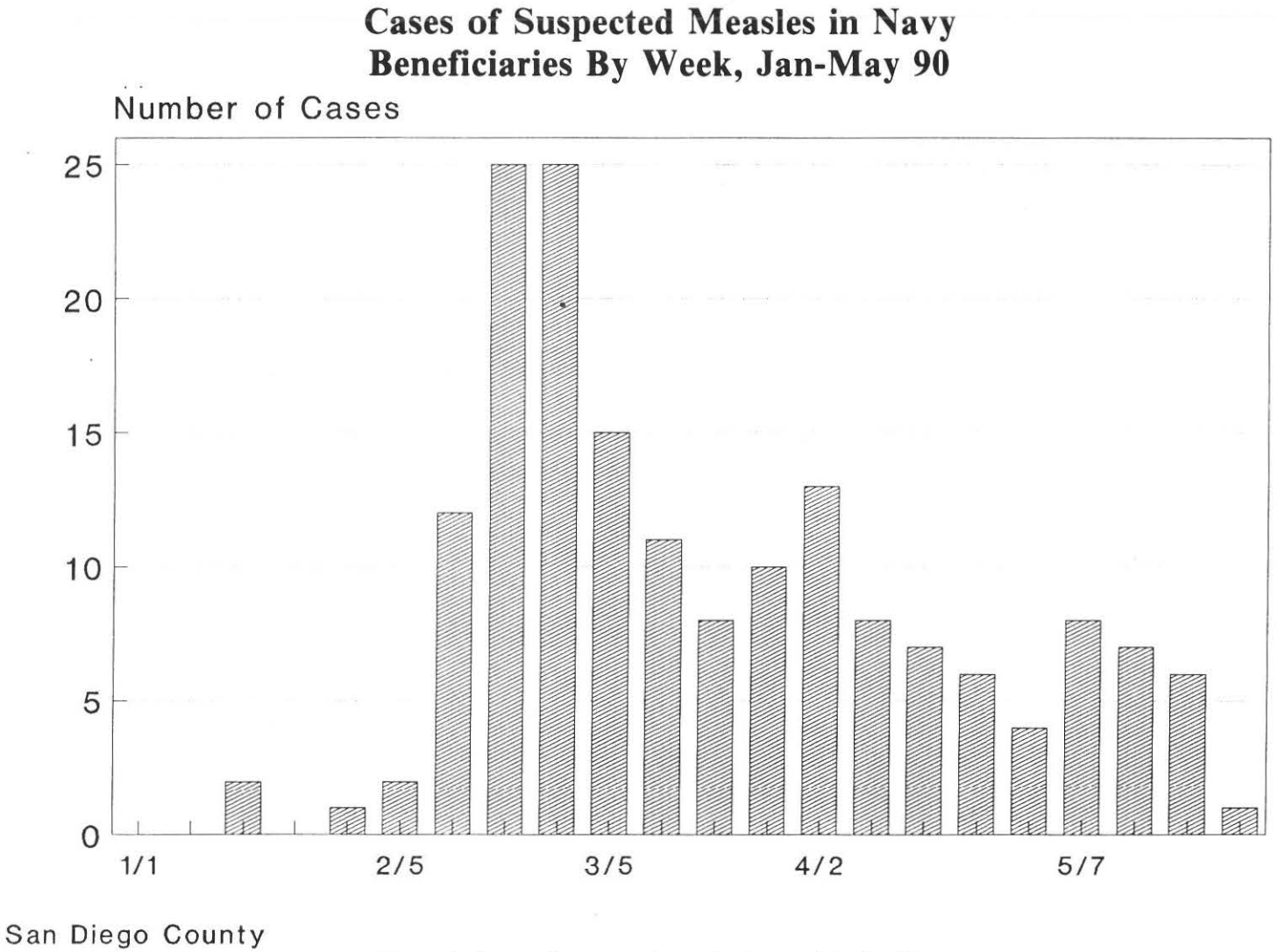

Figure 1. Cases of suspected measles by week in San Diego County Navy beneficiaries, Jan-May 1990

cal records for measles vaccination and referred patients to immunization clinics. Signs were posted on clinic doors reminding parents to have their children vaccinated.

The pathology department acquired a commercially available rapid serum test for measles antibody (IgG). Laboratory experts found they could perform the test for an estimated unit cost, including equipment and labor, of $2. For most hospital personnel so screened the test was positive for antibodies and represented a considerable savings from the unit cost of the MMR vaccine of $17.35.

Navy Measles Epidemic

From 1 Jan to 31 May 1990 over 171 Navy beneficiaries in San Diego County were diagnosed with suspected measles (Figure 1); 105 patients were male and 66 were female. Patients suspected of measles ranged in age 1 month to 51 years (median 2.7 years). As of early June, 23 (82.1 percent) of 28 suspected measles patients who were tested (donated acute and convalescent sera) were confirmed serologically.

Thirty-six (21.1 percent) Navy cases were active duty personnel (Table 1). Twenty-one active duty cases occurred in one San Diego military recruit camp. The recruit camp quickly adjusted its vaccination schedule to give the measles vaccine earlier in training. At least five ships had a suspected measles case. Health care providers accounted for three cases; a physician, a nurse, and a hospital corpsman. Only two of 36 active duty suspected cases had documentation of previous measles vaccination at least 1 month prior to the onset of their symptoms.

A total of 135 suspected measles cases occurred in non-active duty Navy beneficiaries (Table 1). Using data from Naval Hospital San Diego (including CHAMPUS), and the Defense Medical Information System, Arlington, VA, rates were calculated for suspected measles cases in San Diego County Navy beneficiaries (Table 1). The highest incidence rates were in children 7-12 months and 13-15 months of age, thus supporting the value of moving the first measles vaccination to 6 months of age. The Navy

experienced 48 suspected measles cases among children 16 months to 6 years of age. Only 5 of these 48 had documented measles vaccination 1 month or more prior to onset of symptoms, 18 had no documentation of measles vaccination, 3 had received a measles vaccine within the last 30 days, and 22 had unknown histories of vaccination. Thus, a large portion of these cases could have been prevented by appropriate vaccination.

The cost of caring for measles patients was high. Approximately 16 percent of pediatric patients between the ages 6 and 16 months required hospitalization and one patient required intensive care. Twenty-seven (75 percent) of the 36 active duty patients were admitted to NHSD for an estimated average length of stay of 5 days. Prophylaxis for contacts of the three health care workers with suspected measles required serologic screening of 58 persons, administration of 121 doses of measles vaccine, and treatment with immune serum globulin for 11 infants and immunocompromised patients.

Conclusion

NEPMU 5's aggressive measles prevention plan set the pace for other San Diego County health care organizations. Six weeks after NEPMU 5 and its consultants adopted a two-dose pediatric immunization regimen, the San Diego County Public Health Department also adopted such a schedule. Primarily due to limited public health care funding, few other San Diego County health care agencies offered measles vaccination to children 6-11 months of age. Although difficult to prove, we believe the Navy's aggressive screening and immunization policies resulted in the waning of the measles epidemic in Navy populations. We are confident that the aggressive prevention plan reduced illness among Navy beneficiaries and saved many health care dollars. We are also confident that the Navy Bureau of Medicine and Surgery's (BUMED) adoption of a two-dose schedule of MMR for all Navy children will help avert future epidemics (BUMED Notice 6230, 28 Mar 90).

In June 1990, BUMED strengthened the NEPMU 5 measles prevention plan (BUMED 010200Z Jun 90), offering supplemental measles prevention recommendations for medical and dental health care workers, students, child care center workers, and family home care providers. The message required documentation of measles vaccination or proof of immunity for active duty and civilian personnel working in these occupations. Personnel born after 1956 were required to have two doses of measles vaccine or proof of immunity.

Epidemics of measles are also occurring outside of California. In 1989, local and state health departments reported 17,850 measles cases to the Centers for Disease Control (CDC), Atlanta, GA. This was a 423 percent increase from the 1988 statistic. During the first 20 weeks of 1990, the CDC received reports of 7,653 measles cases, an increase from 1989 of 39.6 percent.(*2*) Twenty-five states have recently reported epidemics.(*2*) The recent trend of epidemics occurring in previously vaccinated individuals (*2-4*) has caused CDC and the Navy to change their measles vaccination policies. Navy Medical Department personnel must be aware of the increased threat this most contagious and potentially life-threatening disease poses to the populations we serve.

TABLE 1
Age Group Distribution and Incidence Rates of Suspected Measles in San Diego County Navy Beneficiaries, Jan-May 1990

Age Group	Number of Suspected Measles Patients	Rate of Suspected Measles Cases/10,000 person-months
6 months or less	4	3.2
7-12 months	39	31.2
13-15 months	16	18.7
16 months-4 years	43	3.5
5-16 years	17	0.7
17 or more years (non-active duty)	16	0.9
active duty	36	0.8
Total	171	1.7

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Highlights From the Naval Medical Research and Development Command

Bethesda, MD

• Endotoxin-Binding Proteins Reduce the Toxicity of Endotoxin

Gram-negative sepsis remains a serious clinical problem with a high mortality rate in combat casualties and peace-time health care. Endotoxin, a cell wall component of gram-negative bacteria, is released during generalized infection, causing reduced blood vessel contractility, low blood pressure, and shock. It has been suggested that endotoxin-binding proteins (EBP), like antibodies, can neutralize the toxic effects of endotoxin. Horseshoe crabs and similar primitive species have endotoxin-neutralizing materials as constituents of their plasma. Researchers in the Septic Shock Research Program at Naval Medical Research Institute, Bethesda, MD, and Navy-sponsored scientists at Associates of Cape Cod, Woods Hole, MA, are evaluating the ability of purified and recombinant forms of EBP to reduce the harmful effects of endotoxin. The results of both *in vitro* and *in vivo* studies demonstrate that EBP complexes with endotoxin and the resulting mixture greatly reduces endotoxin's toxicity. Further, the recombinant form of EBP appears to have improved properties over the naturally occurring material.

* * *

• REFLUPS: A Revolutionary Concept for Meeting the Medical Fluids Requirements of Forces in Remote Areas

The need to ensure an adequate supply of sterile fluids for injection and lavage for military forces operating in remote areas prompted a joint research and development effort between the Army and Navy beginning in 1981. This effort resulted in a prototype of the Resuscitative Fluids Production System (REFLUPS) that will be available for testing and evaluation in March 1992. REFLUPS is intended to be approved by the FDA for use in defined disaster situations and military scenarios. The system uses reverse osmosis filters and ultrafilters to produce sterile water from any available water source (such as a nearby body of water, a municipal water supply, or a military Reverse Osmosis Water Purification Unit). REFLUPS will accurately dilute fluid concentrates to physiological strength and USP standards, and aseptically package 80-100 liters of fluid per hour. Solutions such as isotonic sodium chloride, lactated Ringer's solution, and sodium chloride-dextrose solution (used for the deglycerolization of thawed frozen red blood cells) will be produced on site. REFLUPS will ensure an adequate supply of fluids for the treatment of battlefield casualties without the need for extended logistics support and will enable the Navy to reduce the amount of resuscitative fluids stored aboard ships and in deployable medical units.

* * *

• Computer Assisted Medical Diagnostics and Information

For several years, NMRDC has worked with various naval laboratories and operational activities to expand the concepts and capabilities of the Computer Assisted Medical Diagnostics, Patient Management, and Medical Information System. The Naval Submarine Medical Research Laboratory in Groton, CT, the Naval Health Research Center, San Diego, CA, and several contractors have produced the initial configurations and components of a multimedia-based computer medical system. The multimedia capabilities will enhance information presentation and availability by providing a user-friendly interface utilizing real photographic images, video displays, and CD-ROM inputs. The system will provide independent duty hospital corpsmen with differential diagnostic consultations and recommendations based on available patient history, signs, symptoms, and laboratory values. It will include several diagnostic modules based on expert systems and neural networks interfaced together, a broad medical and naval manual/instruction library, office management and inventory routines, medical mission planning exercises, the Naval Health Sciences Education and Training Command's CAMIS education tool, and other advanced research computer concepts and applications. The overall system is being configured in the research and development phase to operate on an advanced 386/486 33 MHz portable PC with a high resolution monitor, a large capacity hard drive, and CD/ROM laser disc players. Aspects of the system will be available through the Navywide SAMMS medical record system as components become validated.

For additional information on these or other medical R&D projects, contact NMRDC Code 40 at Commercial (301) 295-1468 or Autovon 295-1468.

Navy STD Treatment Guidelines

New Navy guidance for treatment of sexually transmitted disease (STD) was promulgated on 1 Nov 1990 by BUMED Instruction 6222.10. In general, the Centers for Disease Control (CDC) 1989 STD treatment guidelines have been adopted as a standard. Some operational and geographic concerns modify the CDC guidelines for use in the Navy.

Some specific modifications for Navy use are:

1. CDC does not recommend test-of-cure (TOC) cultures for uncomplicated gonorrhea (GC) treatment with ceftriaxone since the drug at present is considered to be 100 percent effective for treatment of GC. However, because of the high prevalence of resistant GC strains in WESTPAC, it is Navy policy that GC cases that were, or might have been, acquired in WESTPAC or Indian Ocean areas must receive a TOC culture, if culture capability is available. Any GC infection not treated with ceftriaxone must receive a TOC culture, if facilities are available, regardless of where the infection was acquired.

2. A baseline syphilis serology (VDRL or RPR) should be obtained whenever a patient presents for treatment of any STD. GC treatment regimens using ceftriaxone plus 7 days of a tetracycline-type antibiotic (tetracycline or doxycycline) are very effective in aborting incubating syphilis. Therefore, a followup VDRL or RPR is not needed if such a regimen is used and there is no evidence of active syphilis, provided the initial serology was negative.

GC treated with other antibiotics such as spectinomycin, norfloxacin, or ciprofloxacin will only abort incubating syphilis if the patient also receives a full 7-day course of a tetracycline-type drug. In these cases, it is *essential* to ensure that the patient takes all 7 days of the tetracycline antibiotic. If there is any question of compliance with the tetracycline/doxycycline regimen, then followup syphilis testing at 60 days is indicated. This would also appear indicated for obviously high-risk individuals with repeated STDs for whom syphilis may be a significant risk. The followup testing presents an important reevaluation and teaching opportunity.

3. All patients will also be tested for HIV when presenting for treatment of an STD. Additional HIV tests are not required unless clinically indicated. HIV testing should be recommended for dependents and other civilians with an STD but can't be required. If they agree to be tested, this must be documented with a signed and witnessed consent form.

4. Hepatitis B vaccine is not routinely recommended at this time for active duty personnel who have had multiple sexual partners or who seek treatment for an STD, as recommended by CDC. However, patients with repeat STDs should be strongly considered for immunization with hepatitis B vaccine. Half-dose vaccine regimens have been approved for some persons (see BUMED 150530Z Nov 89 and BUMED 012245 Dec 89 instructions).

Specific questions regarding the new STD treatment guidelines or local variations should be addressed to local preventive medicine departments or the nearest Navy Environmental Preventive Medicine Unit.

Navy Museum Seeks Desert Shield/ Storm Artifacts

The Navy Memorial Museum at the Washington Navy Yard is seeking artifacts and documents relating to the Navy Medical Department's participation in Desert Shield/Storm. Items include Desert Camouflage Battle Dress Uniforms (BDUs) and field equipment from hospital corpsmen serving ashore. The museum also needs working uniforms of medical personnel who served afloat with the hospital ships or amphibious forces. Such items include t-shirts, trousers and dungarees, and utility caps. Photos, slides, copies of letters and journals are also needed to aid in writing the history of Navy medicine in the Gulf war.

Any additional items used by Navy medical personnel in the Gulf are desired to make the museum's collection as complete as possible.

Contact Mr. Jan K. Herman, BUMED Historian
Bureau of Medicine and Surgery
Code 09H
2300 E Street, N.W.
Washington, DC 20372-5120
Telephone: Autovon 294-1297
Commercial (202) 653-1297

Southern Medical Association Meeting

The Southern Medical Association has issued an invitation to all physicians who served in Desert Shield/Storm to attend their annual meeting in Atlanta, GA, 16-19 Nov 1991. Registration fee for this meeting has been waived for these physicians, and they will be honored at the opening ceremony on 16 Nov. For more information write to: Southern Medical Association, P.O. Box 190088, Birmingham, AL 35219-0088, or call 1-800-423-4992.

Women in Navy Dentistry

Dr. Sheila McCabe-Twohey

Today's women are entering the workplace at levels thought unattainable just a few short years ago. Job positions and salaries for women in business, industry, and government are climbing at an accelerated rate. And, finally, women are being properly recognized for their talents and skills.

The health professions are also attracting a larger number of women and dentistry is no exception. The American Dental Association (ADA) has stated that 32.2 percent of the freshman class entering dental school in 1990 were women as compared to only 13.3 percent in 1980. Significantly, the current president-elect of ADA, Dr. Geraldine Marrow, is the first woman to be elected to this position.

In a similar demographic trend, women are entering the military and attaining positions formerly thought to be male bastions only. Military women are aviators, commanding officers of ships, and hold positions in the flag ranks in all services, line and staff corps.

The Navy Dental Corps likewise has enjoyed a surge in women entering its ranks. At present, the Dental Corps is comprised of 172 women dentists or 10 percent of the corps, and the dental technician rating is composed of 1,291 or 36 percent women dental technicians. Out of the 172 women dentists 36, or 21 percent, are specialists.

Recently the first women in the 78-year history of the Navy Dental Corps were selected to the rank of captain. CAPT-selectee Carol I. Turner is presently head of the Logistics Branch in the Dental Division of the Bureau of Medicine and Surgery and will report for Duty Under Instruction at the Naval War College, Newport, RI. CAPT-selectee Sheila McCabe-Twohey is a periodontist stationed at Naval Hospital, San Diego, CA.

Following the invasion of Kuwait by Iraq, the armed forces were called upon to help maintain stability of the strategic Persian Gulf and to deter aggression. The U.S. Navy and Marine Corps were among the first units to begin movement into the Persian Gulf area. As is the mission of the Navy Medical Department, officers and enlisted personnel were called to mobilization billets on hospital ships, in fleet hospitals, and with Fleet Marine Force units. Numerous other ships with medical and dental department personnel were also deployed to this area of Southwest Asia.

The Dental Corps once again demonstrated excellence and professionalism in all areas. During the initial phase of Operation Desert Shield, Navy dental officers and technicians were ordered to units

Dr. Barbara Slabe

Dr. Carol Turner

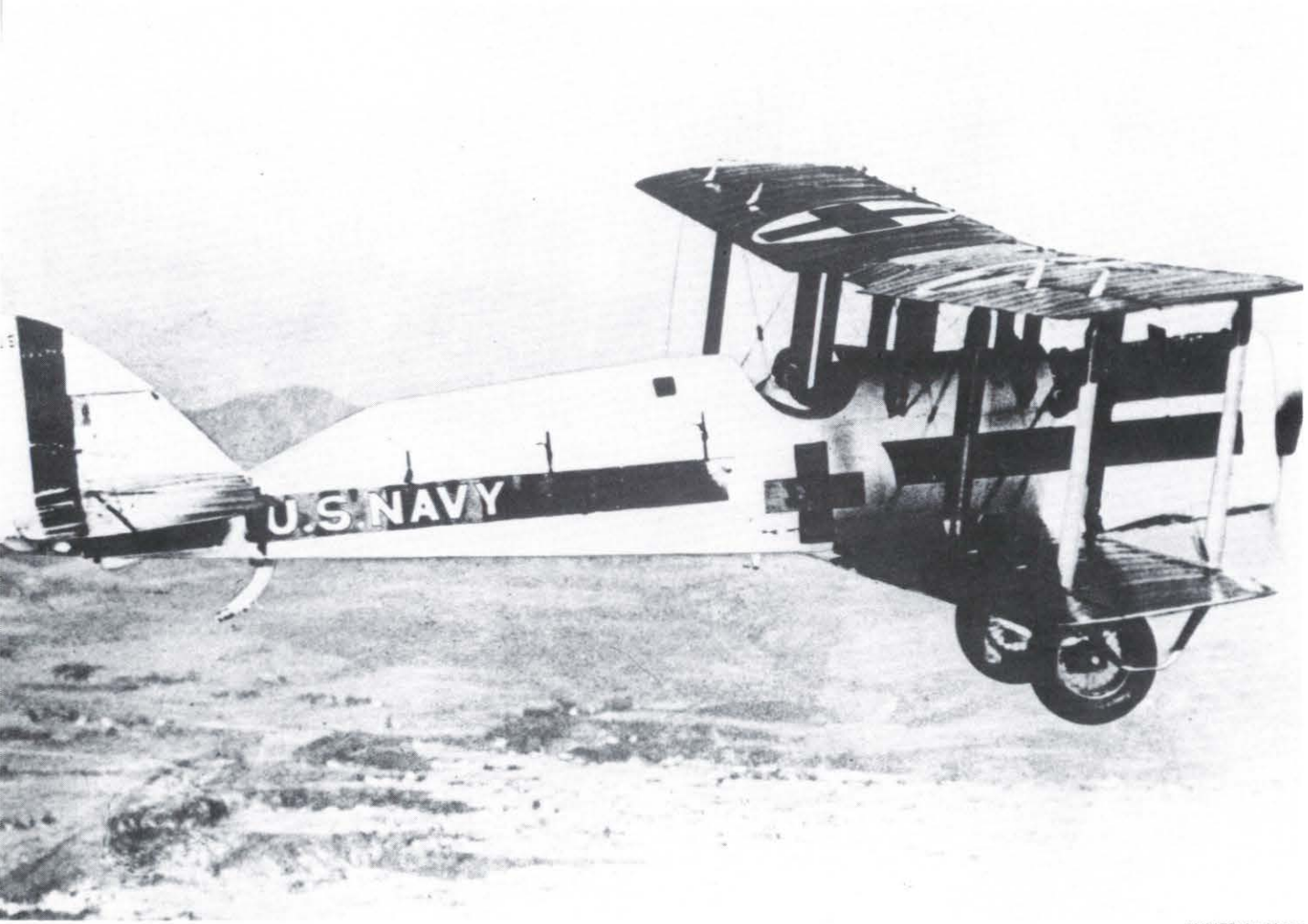
deploying to the Arabian Desert in sea billets and with the Fleet Marine Force. By the end of the fighting in the theater of operations, there was a total complement of 201 dental officers and 564 dental technicians in the Persian Gulf in support of Operation Desert Storm.

During this military conflict, another noteworthy milestone occurred as women dental officers and technicians for the first time in history served ashore in hostile fire areas. At the height of the campaign, eight women dental officers and 47 women dental technicians served with the ground forces in the desert and at sea. Women reservists recalled to duty were represented in these totals by CDR Barbara Slabe at Fleet Hospital 15 and eight women dental technicians. The women on the Navy dental team served admirably and shared all duties and assignments with their men counterparts.

We are extremely proud of the contributions and accomplishments of our Dental Corps members during Operations Desert Shield/Storm and take particular pride in the dedication of our first women dentists and technicians with ground forces "in harm's way." Congratulations for a job well done!

—Submitted by CAPT R.J. Flinton, DC, BUMED.

Navy Medicine 1922



Ambulance plane (JN-4) "Jenny"

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